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# The Impact of Controlling Language and Source Similarity on Psychological Reactance

Caroline Yarbrough

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THE IMPACT OF CONTROLLING LANGUAGE AND SOURCE SIMILARITY ON  
PSYCHOLOGICAL REACTANCE

by

CAROLINE YARBROUGH  
(Under Direction of Karen Naufel)

ABSTRACT

Persuasive health messages are frequently advertised throughout the pandemic to decrease the spread of COVID-19 while increasing the likelihood of immunity. However, research demonstrates that persuasive health messages may be ineffective because they have the potential to elicit psychological reactance. Reactance is characterized by a state of unpleasant motivational arousal and often occurs when individuals experience or perceive threats to their freedom, and it can be evoked through controlling language (Frey et al., 2021; Grandpre et al., 2003). Additionally, research has shown that similarity is associated with liking (Cialdini & Trost 1998) and people are often more inclined to comply when a message is delivered by a similar source (Gino et al., 2009). However, research has not tested the extent that controlling language can be mitigated if the source of information is a similar other. The proposed research fills this gap. Specifically, participants will engage in an experiment manipulating controlling language (low, high) and source similarity (similar, dissimilar), and then respond to measures of perceived threat, anger, negative cognitions, attitudes towards the message, and behavioral intentions (measures of reactance).

INDEX WORDS: Psychological reactance theory, Psychological reactance, Boomerang effect, Free behaviors, Cognitive dissonance theory, Implicit and explicit language.

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PSYCHOLOGICAL REACTANCE

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A Thesis Submitted to the Graduate Faculty of Georgia Southern University in Partial  
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## CHAPTER 1

### INTRODUCTION

Persuasive health messages, campaigns, and policies are often employed to coax people to participate in healthier behaviors and these messages often overtly promote and/or discourage specific behaviors. For example, the Center for Disease Control and Prevention (CDC) put forth information regarding behaviors to mitigate further spreading Covid-19, such as social distancing, wearing a mask, frequently sanitizing hands, and more (CDC, 2020). Similarly, the United States White House initiated a Covid-19 vaccine mandate (Aishvarya, 2021) only for it to fail. In contrast, Dorothy Oliver, a resident of Panola, Alabama championed vaccines and helped almost all eligible adults in her community get vaccinated (Pfeffer & Kantor, 2021). There are key differences in these events, but they all involve similar aspects: the promotion and discouragement of specific behaviors and either positive or negative reactions from the public. In the present study, I investigate how perceived similarity to the communicator of a message and the language used in that message impact the appeal and effectiveness of persuasive health messages.

#### **Reactance**

The degree of positive impact or effectiveness of a persuasive message may be impacted by *psychological reactance*. Psychological reactance is characterized by negative feelings and motivational arousal, in which goals are directed towards the re-establishment of freedoms that are perceived as threatened (Brehm, 1966). *Psychological reactance theory* states that after behavioral freedoms have been threatened or are perceived as threatened, individuals will come to value the threatened freedom even more so than before, increasing the motivation to defy or

re-establish the freedom under attack. Therefore, persuasive messages often lead to outcomes opposite to what the communicator intended - when this happens, it is referred to as the *boomerang effect* (Brehm, 1966).

Reactance appears in a variety of circumstances in which individuals believe that they have the freedom to behave how they choose. When one perceives a threat or limitation of their ability to participate in free behaviors, reactance is likely to occur. *Free behaviors* refer to actions an individual believes they are entitled to perform (Seemann et al., 2005). Examples of reactance-prone situations or circumstances that limit one's free behaviors include students being prohibited from using cellphones in school, being forced to pay tuition or fees, or being convinced to buy a certain food at the store (Steindl et al., 2015). These situations are similar in that people are being told what to do. When reactance occurs, people experience an unpleasant state of discomfort accompanied by motivational arousal to reduce that discomfort. In other words, people do not appreciate feeling as though they do not have a choice and will often react negatively when freedoms, opportunities, choices, etc. are threatened or taken away. Additionally, Steindl et al. noted that the accompanying unpleasant motivational arousal is linked with behavioral and cognitive actions to regain the freedom under threat. That is, reactance typically motivates people to act and think in a certain way, to restore whatever they feel is being threatened.

Direct and indirect restoration of freedoms are two potential behavioral efforts for regaining freedom (Steindl et al., 2015). *Direct restoration* involves actively disregarding and behaving in opposition to the imposed alternative. An example of direct restoration would be a student, Alex, using their cell phone during class despite a policy prohibiting cell phone use in school. Alternatively, *indirect restoration* can be achieved by watching another individual

perform the freedom under threat. An example of indirect restoration would be Alex observing one of his classmates using their cell phone during class. Oftentimes, those engaging in indirect restoration will show support for those behaving in opposition to the threat, thus reinforcing the behavior of those engaging in direct restoration.

Additionally, Steindl et al. (2015) notes that cognitive efforts to reestablish freedoms under threat can be described largely by cognitive dissonance theory. *Cognitive dissonance theory* states that individuals tend to reevaluate alternatives to maintain consistency in their beliefs/ideals. Further, the authors state that emotions such as uncomfortableness, hostility, aggression, and anger are often displayed by threatened individuals. Various research studies examine factors that may impact reactance, such as controlling language (Frey et al., 2021, Dillard & Shen, 2005, Miller, 2015; Miller et al., 2007; Pennebaker and Sanders, 1976) and the message recipients' perceived similarity to the source of the threat (Berscheid, 1966; Burger et al., 2004; Cialdini & Trost, 1998; Faraji-Rad et al., 2015; Song et al., 2018).

Indeed, research does confirm these cognitive and behavioral processes. For example, Sprengholz et al. (2021) conducted two studies examining the impact of reactance to vaccine mandates and vaccine scarcity on behavioral intentions. After participants indicated their degree of vaccine willingness, they were randomly assigned to groups in which they were asked to imagine one of three scenarios: 1) Covid-19 vaccines were mandatory and those not getting it would be fined 2) Covid-19 vaccines were voluntary but scarce, and 3) Covid-19 vaccines were scarce. Results from their study showed that those with low vaccination intentions experienced greater reactance to vaccine mandates, whereas those with high vaccination intentions experienced less reactance to mandates. Additionally, results showed that those with high vaccination intentions experienced greater reactance to the implied scarcity of vaccines than

those with low vaccination intentions. In both studies, reactance was linked to the motivation to oppose restricted freedom.

Together, these studies suggest that a threat, or the perception of a threat, to an individual's free behaviors creates the inspiration to defy the source or regain the freedom under attack. Evidence also shows that when people feel that their alternatives are scarce or dwindling then they will often reevaluate alternatives to be a more attractive option than before. However, there has been some research to suggest that negative reactions towards a message may be mitigated by choosing an optimal source to deliver a message and messages will likely be better received when they contain low levels of controlling language.

### **Controlling Language and Reactance**

Different types of language, such as implicit and explicit messages may have an impact on the degree of reactance experienced in response to a persuasive message. *Implicit messages* are statements that may at times be inconsistent with the speaker's intentions; implicit messages often lead to multiple interpretations of the message (Miller, 2015). For example, an implicit message may be ambiguous, sensitive, and understanding, such as: "Vaccinations have high efficacy, but deciding on whether to get vaccinated is scary, so I completely understand your reservations." *Explicit messages* utilize demanding language such as 'should', 'ought', and 'must' to tell a person directly what to do. Explicit messages are statements that directly and simply state the speaker's intention; there is little to no room for other interpretations (Miller, 2015). For example, an explicit message may be demanding, bossy, and overt, such as: "The evidence to support vaccines is abundantly clear. Everyone should get vaccinated as soon as possible to prevent Covid-19 and reduce their risk of infection." Generally, explicit messages are

perceived as more controlling and seem to elicit more reactance than less controlling, implicit messages.

Controlling language is characterized by increased commands or orders (Miller et al., 2007). High-controlling language is categorized as more directive and powerful; and high-controlling language messages are often clear, unambiguous, and brief. Unlike high-controlling language, low-controlling language is often less commanding, more polite, and more ambiguous. For example, Frey and colleagues (2021), illustrate the influence of controlling language in a syllabus, on students' reactance and intent to comply. In the study, participants were randomly assigned to the high-controlling syllabus (i.e., "you are strictly prohibited") and low-controlling syllabus conditions (i.e., "you should try to avoid"). Results from the study suggest that when high-controlling language is used, students will experience greater reactance and a lower likelihood of compliance; whereas low-controlling language resulted in a lower impact on reactance and led to a greater intent to comply. By applying these results and considering the importance of the type of language used in persuasive messages, people may create persuasive health messages that are more effective, more likely to be complied with, and received more positively.

Pennebaker and Sanders (1976) investigated the effects of reactance arousal on the likelihood of others creating American graffiti. Their study placed four placards with anti-graffiti messages in men's restroom stalls that varied in threat (e.g., "Do NOT write on the walls" vs. "please do not write on the walls") and authority (e.g., Chief of police vs. grounds committee man). Results from their study found that more participants wrote on graffiti placards that used higher threats delivered from a higher authority. In other words, high-controlling/direct messages paired from a source of higher authority elicited the highest levels of reactance, whereas low-

controlling messages from sources of higher authority elicited lower levels of reactance. Results from the study provide evidence to suggest that individuals will be more inclined to comply with messages when they utilize autonomy supportive (low-controlling) language and when individuals view the source of the message as less authoritative. In sum, messages containing controlling language are often perceived to be more threatening thus eliciting higher levels of reactance, but we have limited knowledge of how the similarity of the communicator plays a role.

### **Source of Information and Reactance**

An abundance of research suggests that when individuals are delivered a persuasive message, the effectiveness of the persuasion attempt is highly dependent upon the audiences' perception of similarity to the source of the message. For instance, Cialdini and Trost (1998) provide evidence to suggest that when individuals perceive someone to be similar to them, they tend to like that person more. Further, research shows that a person will be more likely to comply with a message if they like the individual delivering it (Gino et al., 2009). One explanation for why individuals like similar others more, is people who are deemed similar are often identified as having preferences that align with our own, therefore their information seems more applicable to us (Faraji-Rad et al., 2015), whereas an alternative rationalization is that similar people are believed to be more well liked, and therefore individuals adhere to their guidance to remain connected with them.

Examining the impact of similar sources on persuasion attempts, Burger and colleagues (2004) report a study in which participants believed they had similar or dissimilar personality scores from an actor. Results from the study demonstrated that participants with similar scores to the actor were more likely to comply than those who believed they had dissimilar scores.

Additionally, Burger et al. suggests that incidental similarities to a communicator, such as having the same first name, being from the same state, or having the same birthday can also lead to increased compliance.

Further demonstrating the notion that similar others are more likely to be complied with, Burnstein et al. (1961) conducted a study in which an adult communicator was presented to a group of children as similar or dissimilar in background and other characteristics such as hometown and preferred activities. Results from their study found that the children adopted more of the preferences of the similar communicator than the dissimilar communicator, an indication that communicator-recipient similarities do aid in the how positively a persuasive message is perceived.

The source delivering a message has been a focus in communication and persuasion research. However, Song et al. (2018) noted the lack of research on how source similarity impacts reactance to freedom threats and noted risk communication studies on trust show that group identity is a strong predictor of perceived similarity (e.g., Earle, 2010; Song et al., 2018). To close the identified gap, the authors conducted research manipulating the different sources, to examine the role of trust and similarity on reactance to freedom threats. The study sampled deer hunter participants and presented them with a policy that restricted the freedom to use urine-based deer attractants (i.e., a commonly used practice) while hunting. The policy was delivered by either the state government, the state wildlife protection agency, or a deer hunting organization. Further, results from Song et al.'s study suggest that participants found the state government to be less similar, indirectly leading to less favorable attitudes, lower intent to comply with the policy, and higher reactance; whereas the deer hunting organization was perceived to be more similar and was linked to more favorable attitudes, higher intent to comply,

and lower reactance. These results indicate that individuals may consider themselves to be dissimilar to the government, the government is associated with greater levels of reactance, and messages/policies from the government are associated with less favorable attitudes and decreased intentions to comply.

In summary, research demonstrates that language impacts the degree of reactance experienced as a reaction to a persuasive message. Particularly, evidence suggests high controlling language creates more reactance, negative attitudes, and lower intentions to comply, whereas low controlling language is linked with less reactance, more favorable attitudes and higher intent to comply (Frey et al., 2021; Miller 2015; Grandpre et al. 2003). Research also shows that the source of the message influences its effectiveness. Studies show that similar others are liked more and thus are perceived more positively (Berscheid, 1966) and receiving a message from a similar source elicits lower reactance than messages delivered by dissimilar others (Burnstein et al. 1961; Faraji-Rad et al., 2015).

### **Statement of Problem**

Although there is evidence to demonstrate the impact of controlling language and source similarity on reactance to persuasion, little research has examined the influence of both variables on reactance to persuasive messages about health. By understanding the weight of controlling language and source similarity on reactance to persuasion, public health professionals, policy makers, etc., can achieve more desirable reactions and increased compliance to the promotion or discouragement of specific behaviors. Further, by examining the relationship between both controlling language (high vs. low) and source similarity (similar vs. dissimilar) on reactance towards persuasion, one may determine a more effective way to promote healthy behavior and increase the persuasiveness of health messages.



Specifically, the study examines controlling language (high vs. low) and source similarity (similar, dissimilar) on measures of perceived threat, anger, attitudes towards the message, and behavioral intentions. Participants were randomly assigned to meet a communicator that was either similar or dissimilar to them, then they received either a high or low controlling persuasive message about Covid-19 vaccines. We hypothesized that there would be a difference in the average effects of controlling language (i.e., a main effect of controlling language) on reactance, and a difference in the average effects of source similarity on reactance (i.e., a main effect of source similarity). Additionally, we hypothesized there will be an interaction between controlling language and source similarity. Thus, the hypotheses of the study are:

- H1: Because research shows that high controlling language creates higher reactance (Frey et al., 2021; Grandpre et al. 2003; Miller 2015), I predict that those who receive a message with a high controlling language will show greater reactance than those who receive messages with low controlling language.
- H2: Because research shows that similar sources of information are liked more and are perceived more positively (Berscheid, 1966; Cialdini and Trost, 1998; Gino et al., 2009) and also shows that receiving a message from similar sources elicits lower reactance than messages delivered by dissimilar sources (Burnstein et al. 1961; Faraji-Rad et al., 2015), I predict that those who receive a message from a dissimilar source will show greater reactance than those who receive a message from a similar source.
- H3: Because research shows that high controlling language creates higher reactance (Frey et al., 2021; Grandpre et al. 2003; Miller, 2015), similar sources are liked more, perceived more positively (Berscheid, 1966; Cialdini and Trost, 1998; Gino et

al., 2009) and met with lower reactance than messages delivered by dissimilar sources (Burnstein et al. 1961; Faraji-Rad et al., 2015), I predicted that those receiving a high controlling message from a dissimilar communicator will show greater reactance than those who received a high controlling message from a similar communicator.

## CHAPTER 2

### METHOD

#### **Participants**

Using the program R Studio Cloud, pwr package, a power analysis was conducted for a 2 x 2 between subjects' multivariate analysis of variance (MANOVA) to determine the minimum number of participants required to achieve adequate power for the detection of a main effect(s) and an interaction. The following was entered into the power analysis:  $ndf = 1$ , alpha level = .05, number of groups ( $ng$ ) = 4, power = .80, and the smallest effect size of interest  $F = .20$ . The resulting number of participants required is 198.2 - to create equal groups the study will recruit 200 participants, which is 50 in each condition. However, the committee agreed to have a stop date of March 5th, 2023 in order to have sufficient time to defend for a summer graduation. Using convenience sampling, this study recruited participants from SONA. Individuals who participated in the study were awarded 0.5 credits in SONA that may be used towards extra credit in a college course.

The final sample of participants included 108 Georgia Southern undergraduate students. The average age of participants was 20.22 years ( $min = 18$ ,  $max = 46$ ;  $n=104$ ). Seventy-six participants identified as cisgender women (70.4%), 28 participants identified as cisgender men (25.9%), and 3 participants identified with two gender identities (2.7%). Sixty-seven participants identified as White (62%), 23 identified as African American/Black (21.3%), and 10 of the participants identified two or more racial identities (11.5%).

Additionally, participants were given the option to report their political affiliation and Covid-19 vaccination status. Forty-six identified as Independent (42.6%), 42 participants identified as Democrat (38.9%), and 20 identified as Republican (18.5%). Sixty-three

participants reported being vaccinated (58.3%), 39 participants reported not being immunized against Covid-19 (36.1%), and 6 participants preferred not to respond (5.6%).

## **Design and Materials**

The study is a 2 (high vs. low controlling language) by 2 (similar vs. dissimilar) full-factorial design. To manipulate high-controlling language, participants read a persuasive message utilizing demanding, explicit language such as, “you simply have to do it” and “do it because you have to” whereas, low controlling language utilized more implicit, autonomy-supportive language such as: “you might want to think about getting it” and “you may want to consider getting it today (see Appendix 2). These prompts are based on Dillard and Shen (2005) and were adapted and supplemented with information from the CDC and Johns Hopkins University for the current study to address Covid-19 vaccinations and boosters. Slight changes to the prompts from Dillard and Shen (2005) were made by removing confounding variables such as blatant insults and social norming.

We varied the similarity of the communicators by either describing them as a student at Georgia Southern University (i.e., “My name is Jordan. I am 21 years old and a student at Georgia Southern. Some of my favorite things include: listening to music, hanging out with friends, tailgating, football games, and going to the beach. I’m excited to settle down and find a good job after graduating.”) or an employee at Appalachian State, (i.e., “My name is Jordan. I am 58 years old and I work at Appalachian State. Some of my favorite things include: research, spending quality time with my family, gardening, reading classic novels and trivia. I’m excited to retire and settle down after a long career.”). The name Jordan was chosen because it is a common name for both women and men to have, therefore participants could interpret the communicator as any

gender. These prompts are derived from Burnstein (1961) and Song et al. (2018) and designed to be similar or dissimilar to college students. [Appendix 2]

## **Measures**

Participants responded to survey items measuring perceived similarity, perceived threat, attitudes towards policy, negative cognitions, behavioral intentions and demographics, which are adapted from previous research (Dillard & Shen, 2005; Song et al., 2018) and described in more detail next.

### *Manipulation Check: Perceived Similarity*

The perceived similarity scale consisted of four items (e.g., Jordan is like me, Jordan is similar to me, Jordan behaves like me) on a five-point scale (1 = strongly disagree, 5 = strongly agree); one of the items was reverse coded (e.g., Jordan is nothing like me). These items were adapted from Faraji-Rad et al. (2015). Analysis revealed acceptable reliability (*Cronbach's a* = .86). Thus, overall means of these items were calculated for each participant.

### *Perceived Threat to Freedom*

Reactance has been conceptualized as a combination of angry affect and negative cognitions in response to freedom threats. Using items adapted from previous research (Dillard & Shen, 2005), perceived threat to freedom is measured using 4 items (e.g., “The message threatened my freedom to choose”, “The message tried to make a decision for me”) on a 5-point response scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree). These items were averaged, and analysis indicated that the scale had acceptable reliability (*Cronbach's a* = .94).

### *Anger*

Similarly, anger was measured by asking participants to convey their feelings on four items: irritation, annoyance, aggravation, and anger (e.g., “I feel irritated after reading this message”, “I feel angry after reading this message”). These items were adapted from previous research (see Dillard & Peck, 2000; Dillard & Shen, 2005). Analysis revealed acceptable reliability (*Cronbach’s a* = .95) and the items were averaged.

### *Negative Cognitions*

Adapting measures from Dillard and Shen (2005), a measure of negative cognitions used the thought-listing task originally developed by Cacioppo and Petty (1981). Participants had 2.5 minutes to list thoughts that they had while reading the message, entering one idea in each of the nine boxes provided. Participants were instructed to enter their thoughts concisely, to move on to the next survey page if they found themselves thinking for more than 15 to 20 seconds, and not to worry about filling out each text box (Song et al., 2018). Qualitative data was not fully coded for this study; rather, it was used to help interpret and support results.

### *Attitudes*

Consistent with Dillard and Shen (2005), participants’ attitudes towards vaccinations, CDC guidelines, and vaccine mandates (i.e., “Vaccines are”, “Complying with CDC guidelines is” and “Vaccine mandates are”) were measured by seven, 7-point semantic differential questions per attitude. Seven-word pairs were used (e.g., bad/good; unnecessary/necessary). The items were averaged, and reliability analysis indicated that the three scales had acceptable reliability; vaccinations (*Cronbach’s a* = .97), CDC guidelines (*Cronbach’s a* = .97), and vaccine mandates (*Cronbach’s a* = .97). Overall means indicated that attitudes towards

vaccines were relatively positive ( $M = 5.31$ ,  $SEM = .14$ ) and so were attitudes towards following CDC guidelines ( $M = 5.74$ ,  $SEM = .13$ ), however, the data suggests that overall attitudes towards vaccine mandates were less positive ( $M = 4.49$ ,  $SEM = .17$ ).

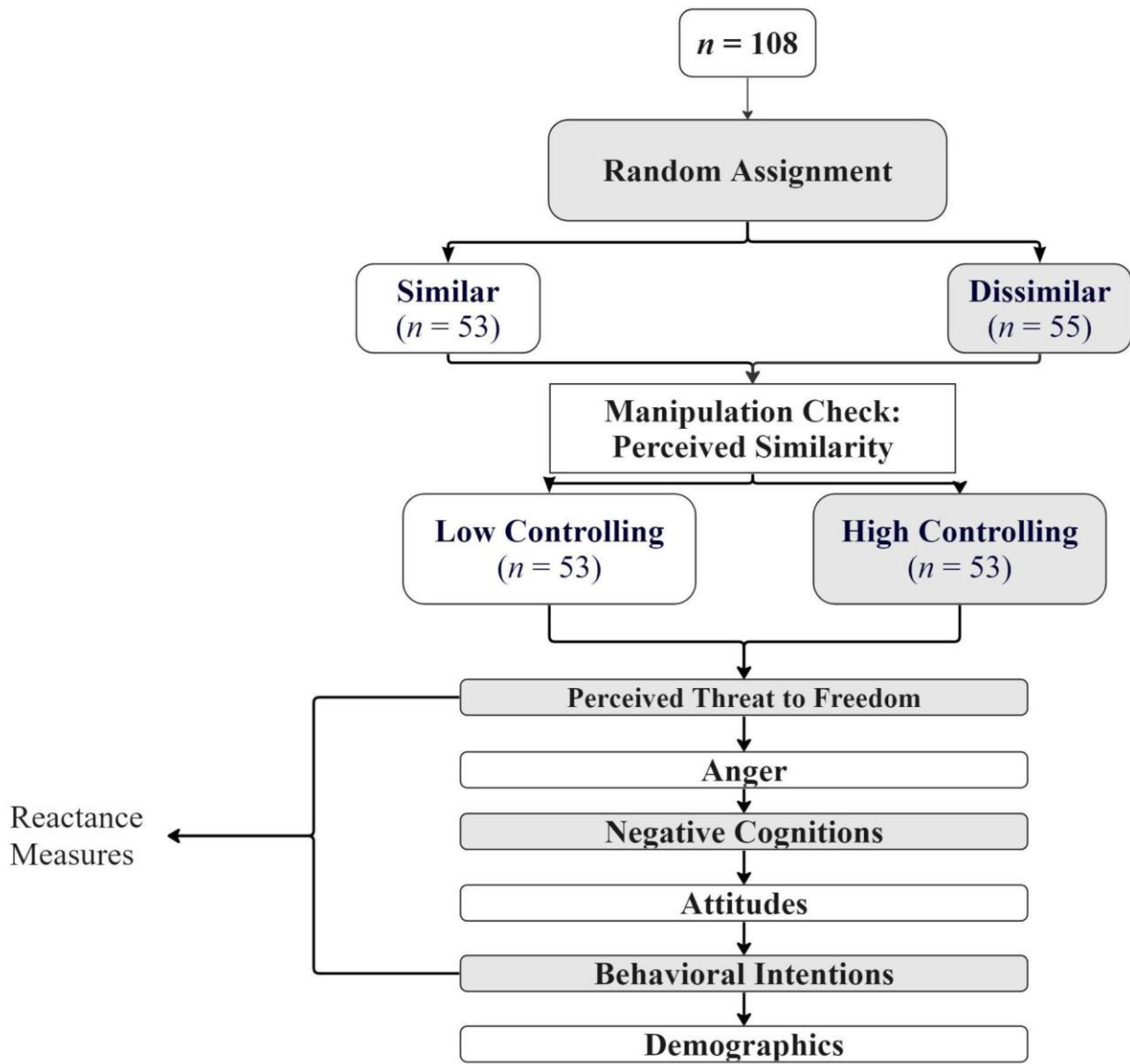
### *Behavioral Intentions*

To determine if boomerang effects occurred or if the message was effective, behavioral intention is measured by a 100-point, single-item estimate of the likelihood that participants would get vaccinated or boosted when they are next eligible.

### **Procedure**

Figure 1 outlines the procedure. Participants are recruited from the SONA system, to participate in a survey for a research study on perceptions towards health messages. After the informed consent procedure, participants are randomly assigned to one of four conditions. All participants are then “introduced” to either similar Jordan or dissimilar Jordan and then instructed to read about them. Next, participants are asked to answer a set of questions measuring their perceived similarity towards the source, such as “The communicator is like me” and “The communicator behaves like me” (Faraji-Rad et al., 2015).

Following the similarity manipulation check, participants are presented a message-using either high or low controlling language-from the person they were just introduced to. Following receiving the message, participants are prompted to fill out a series of questions measuring perceived threat to freedom, anger, negative cognitions, attitudes, and behavioral intentions. Next, participants are given the demographics questionnaire and asked to report their gender identity, ethnic background, age, vaccination status, and political affiliation. Once demographics were completed, participants were then debriefed and thanked for their participation in the study.

**Figure 1***Participant flow- 2 x 2 MANOVA*



## CHAPTER 3

### RESULTS

#### **Data Cleaning**

If a participant did not complete at least 70% of the study, spent less than 1.5 minutes taking the survey (average time to complete = 6 minutes and 43 seconds) they were excluded from analyses. Thus, nine participants were excluded from analyses.

## **Descriptive Data**

In addition to calculating grand means for every dependent variable, we also ran Pearson's correlations among all variables to explore potential relationships. The data are reported in Table 1.

**Table 1***Correlation Matrix*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Perceived Threat (1-5)	108	2.65	1.37	—						
2. Perceived Similarity (1-5)	108	3.09	.98	.042	—					
3. Anger (1-5)	108	2.00	1.21	.75**	-.00	—				
4. Attitude (vaccines) (1-7)	108	5.31	1.45	-.44**	-.15	-.54*	—			
5. Attitude (CDC) (1-7)	108	5.74	1.30	-.36**	-.12	-.48**	.72**	—		
6. Attitude (Mandates) (1-7)	108	4.49	1.76	-.49**	-.23*	-.57**	.79**	.58**	—	
7. Behavioral Intentions (1-100)	106	54.21	38.58	.39**	-.20*	-.44**	.76**	.59**	.70**	—

\*Indicates  $p < .05$ . \*\*Indicates  $p < .01$ .

## Manipulation Check

An independent samples t-test was used to analyze the effect of the similarity manipulation. The results suggest the similarity manipulation did not have an effect,  $t(106) = 1.46$ ,  $p = 0.15$ , Cohen's  $d = 0.97$ ,  $CI = (-.64, .10)$ . Specifically, those who received the similar manipulation rated the source of the message to be moderately similar ( $M = 3.22$ ,  $SD = 1.07$ ,  $SEM = 0.15$ ), and those who received the dissimilar manipulation rated the source of the message to be moderately similar as well ( $M = 2.95$ ,  $SD = 0.85$ ,  $SEM = 0.12$ ).

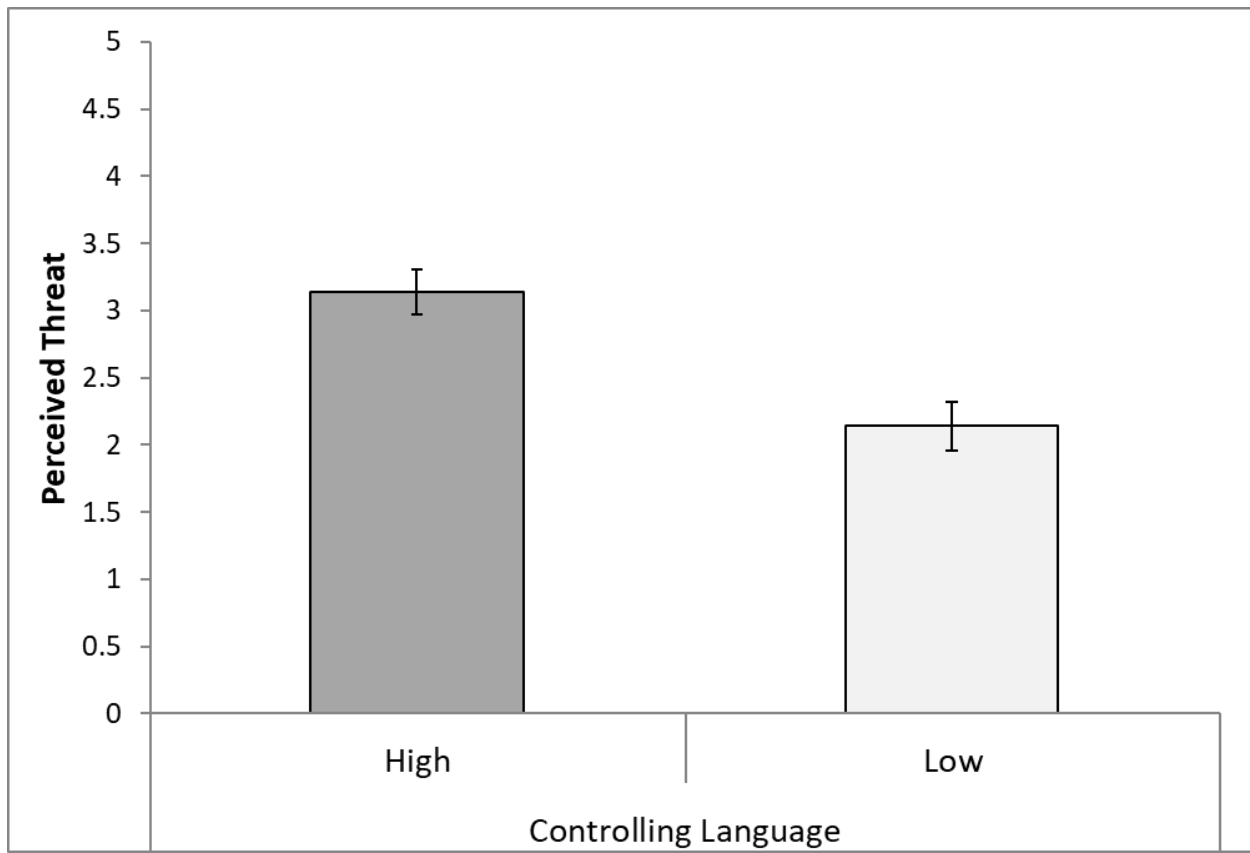
## Primary analyses

We entered the dependent variables (e.g., perceived threat, anger, attitudes towards vaccines, attitudes towards CDC guidelines, attitudes towards vaccine mandates, and behavioral intentions) into a 2 (similar vs dissimilar) X 2 (low controlling language vs high controlling language) MANOVA. There was no significant difference of similarity on the items,  $F(6, 97) = .26$ ,  $p = .95$ , *Wilk's  $\lambda$*  = .98,  $\eta^2 p = .02$ ,  $1-\beta = .12$ . That is, participants reported no significant differences in perceived similarity to the source of the persuasive message. Additionally, there was no significant interaction between similarity and controlling language,  $F(6, 97) = .73$ ,  $p = .63$ , *Wilk's  $\lambda$*  = .96,  $\eta^2 p = .04$ ,  $1-\beta = .28$ .

However, there was a main effect of controlling language,  $F(6, 97) = 5.03$ ,  $p < .001$ , *Wilk's  $\lambda$*  = .76,  $\eta^2 p = .24$ ,  $1-\beta = .99$ . Therefore, I examined the univariate ANOVA test of between subject effects for controlling language. This test revealed a main effect of controlling language on perceived threat,  $F(1, 102) = 16.30$ ,  $p < .001$ ,  $\eta^2 p = .14$ , such that messages containing low controlling language were perceived as less threatening ( $M = 2.13$ ,  $SEM = .18$ ) than messages containing high controlling language ( $M = 3.16$ ,  $SEM = .17$ ).

**Figure 2**

*Perceived Threat to Controlling Language*



## Exploratory analyses

We also explored possibilities with vaccination status and language. In the demographics section, participants reported the degree to which they were immunized against Covid-19. Thirty-five participants reported being fully vaccinated (32.4%), 21 people reported being fully vaccinated and boosted (19.4%), 7 reported being partially vaccinated (6.5%), 39 participants reported not being vaccinated against Covid-19 (36.1%), and 6 people preferred not to respond (5.6%). Participants who reported receiving Covid-19 immunizations in any capacity (fully vaccinated, fully vaccinated and boosted, and partially vaccinated) were grouped together to create an independent variable with two levels: vaccinated ( $n = 63$ ; 58.3%), and unvaccinated ( $n = 39$ ; 36.1%).

We entered the dependent variables (e.g., perceived threat, anger, attitudes towards vaccines, attitudes towards CDC guidelines, attitudes towards vaccine mandates, and behavioral intentions) into a 2 (vaccinated vs. unvaccinated) X 2 (low controlling language vs high controlling language) MANOVA.

Exploratory analyses revealed a main effect of controlling language,  $F(6, 91) = 5.12, p < .00$ , *Wilk's  $\lambda$*  = .99,  $\eta^2 p = .25$ ,  $1-\beta = .99$ . Additionally, there was a main effect of vaccination status  $F(6, 91) = 20.56, p < .01$ , *Wilk's  $\lambda$*  = .42,  $\eta^2 p = .58$ ,  $1-\beta = 1$ . There was no significant interaction between vaccination status and controlling language,  $F(6, 91) = .59, p = .74$ , *Wilk's  $\lambda$*  = .96,  $\eta^2 p = .04$ .

To explore the main effects, we examined the univariate ANOVAs. Results indicated a significant main effect of controlling language on perceived threat,  $F(1, 96) = 17.13, p < .01$ ,  $\eta^2 p = .15$ ,  $1-\beta = .98$ , such that those in the low controlling language condition reported lower levels of perceived threat ( $M = 2.19, SEM = .18$ ) compared to those in the high controlling language

condition ( $M = 3.26$ ,  $SEM = .18$ ). There was also a significant main effect of controlling language on anger,  $F(1, 96) = 5.14$ ,  $p = .03$ ,  $\eta^2p = .05$ ,  $1-\beta = .61$ , such that participants in the high controlling language condition reported higher levels of anger, irritation, aggravation and annoyance ( $M = 2.34$ ,  $SEM = .17$ ), whereas those in the low controlling language condition reported lower levels ( $M = 1.80$ ,  $SEM = .17$ ).

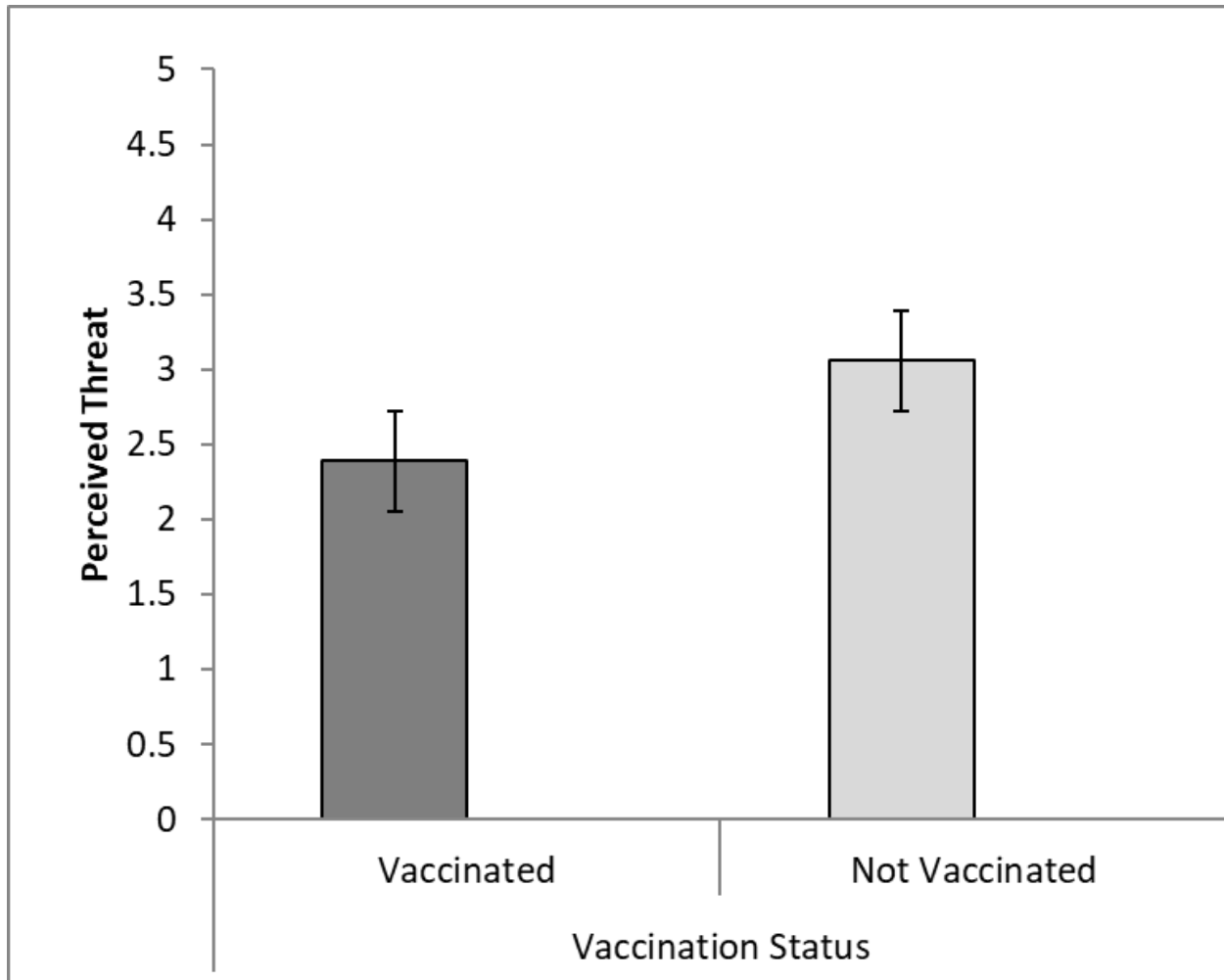
Additionally the ANOVAs indicated a significant main effect of vaccination status for perceived threat  $F(1, 96) = 6.72$ ,  $p = .01$ ,  $\eta^2p = .07$ ,  $1-\beta = .73$ . Estimated marginal means revealed that participants who were unvaccinated found persuasive messages about Covid-19 immunizations to be more threatening ( $M = 3.06$ ,  $SEM = .20$ ), compared to individuals that were vaccinated ( $M = 2.39$ ,  $SEM = .16$ ). There was a significant main effect of vaccination status on anger  $F(1, 96) = 10.19$ ,  $p < .001$ ,  $\eta^2p = .10$ ,  $1-\beta = .89$ , such that those who were not vaccinated reported higher levels of anger, irritation, aggravation and annoyance ( $M = 2.45$ ,  $SEM = .19$ ), whereas those who were vaccinated reported lower levels of anger ( $M = 1.69$ ,  $SEM = .15$ ). There was a significant main effect of vaccination status on attitudes towards Covid-19 vaccinations,  $F(1, 96) = 41.51$ ,  $p < .001$ ,  $\eta^2p = .30$ ,  $1-\beta = 1$ . Results indicated that participants who were not vaccinated reported more negative attitudes towards getting vaccinated against Covid-19 ( $M = 4.32$ ,  $SEM = .19$ ), when compared to those who did receive the Covid-19 vaccine ( $M = 5.95$ ,  $SEM = .16$ ). Similarly, there was a statistically significant main effect of vaccination status on attitudes towards compliance with CDC's guidelines for Covid-19,  $F(1, 96) = 18.74$ ,  $p < .001$ ,  $\eta^2p = .16$ ,  $1-\beta = .99$  and attitudes towards Covid-19 vaccination mandates,  $F(1, 96) = 52.93$ ,  $p < .001$ ,  $\eta^2p = .36$ ,  $1-\beta = 1$ . Estimated marginal means revealed that participants who are unvaccinated had slightly less favorable attitudes towards following CDC guidelines ( $M = 5.13$ ,  $SEM = .19$ ), when compared to vaccinated participants ( $M = 6.19$ ,  $SEM = .15$ ). Unvaccinated

participants reported more negative attitudes towards vaccination mandates ( $M = 3.22$ ,  $SEM = 23$ ), when compared to vaccinated individuals ( $M = 5.36$ ,  $SEM = .18$ ). Finally, data showed a significant main effect of vaccination status on behavioral intentions,  $F(1, 96) = 114.91$ ,  $p < .001$ ,  $\eta^2p = .55$ ,  $1-\beta = 1$ , such that unvaccinated individuals reported much lower behavior intentions or intent to get vaccinated ( $M = 19.88$ ,  $SEM = 4.24$ ), whereas vaccinated participants reported higher intent to get vaccinated or boosted when next eligible ( $M = 77.97$ ,  $SEM = 3.38$ ).



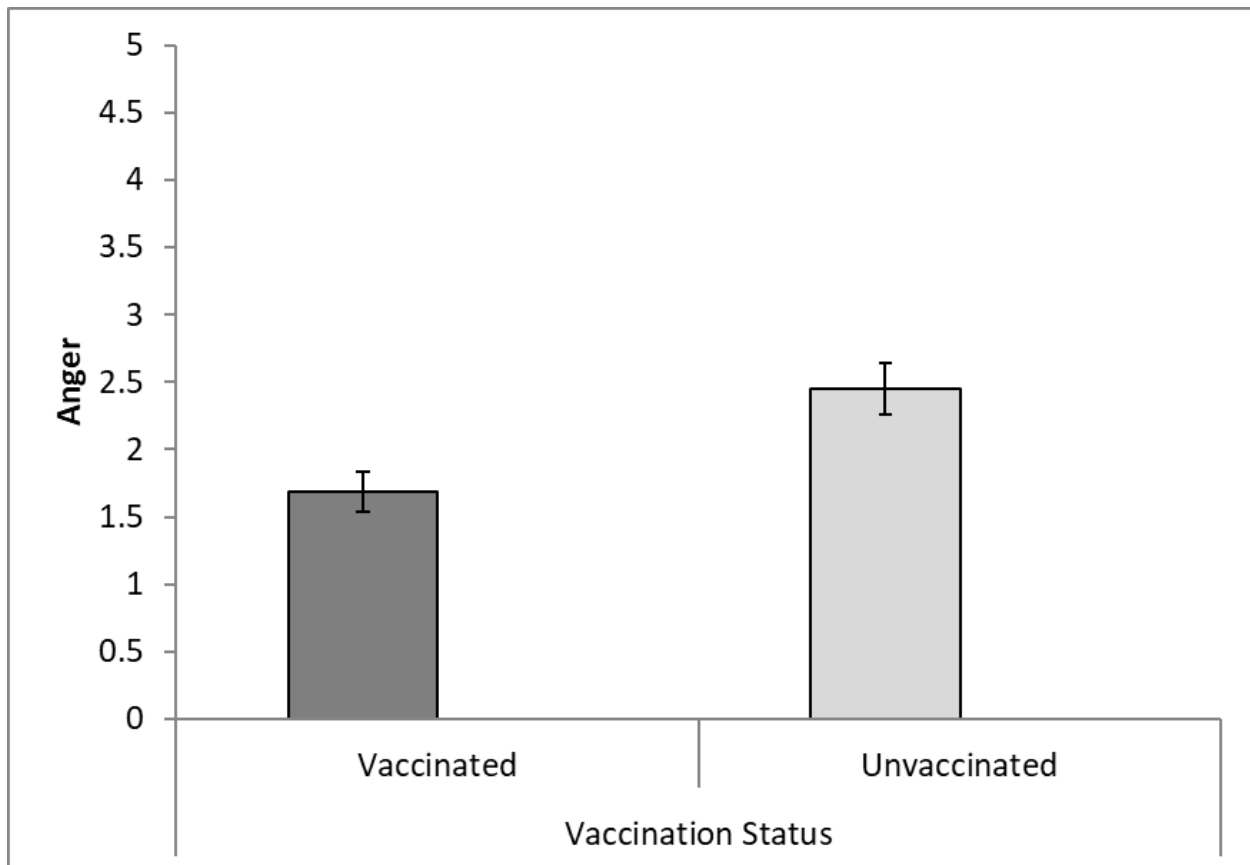
**Figure 3**

*Perceived Threat and Vaccination Status*



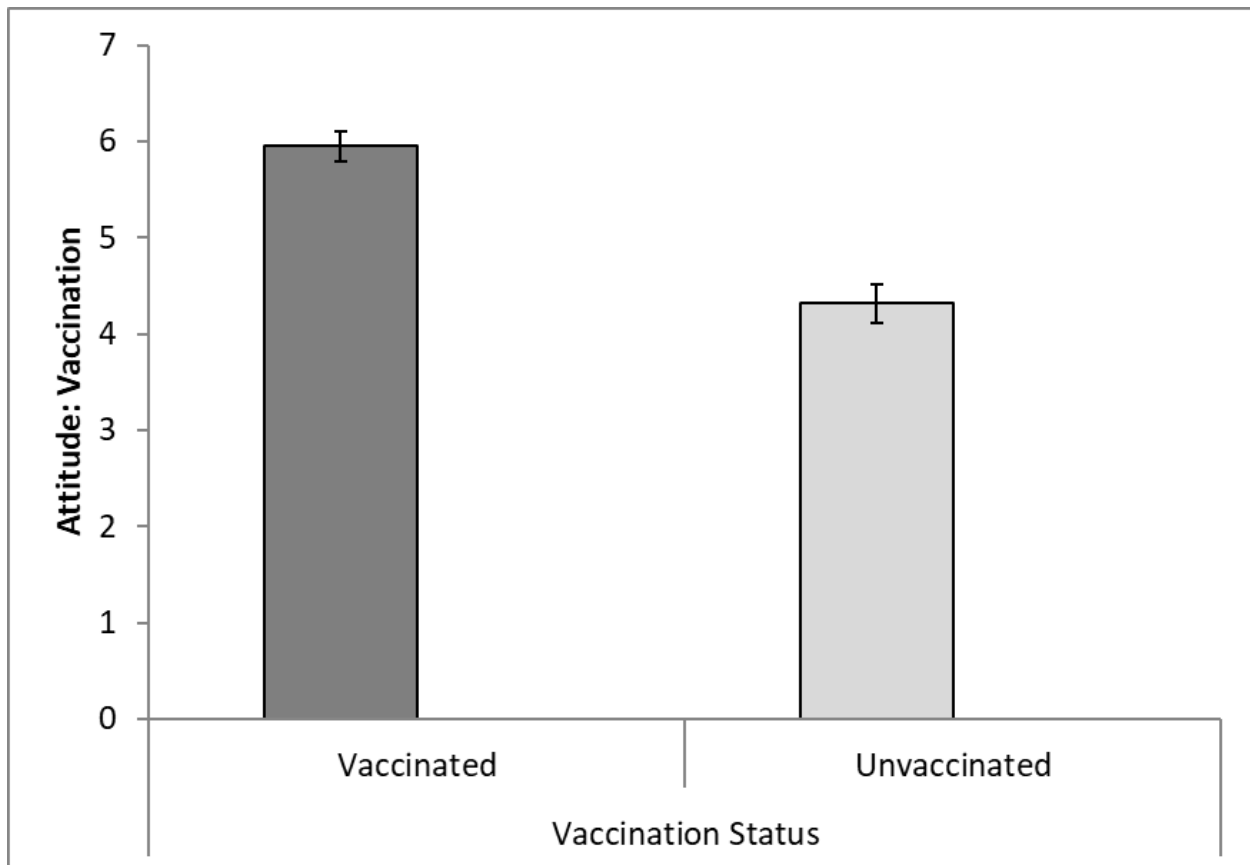
**Figure 4**

*Anger Towards Message and Vaccination Status*



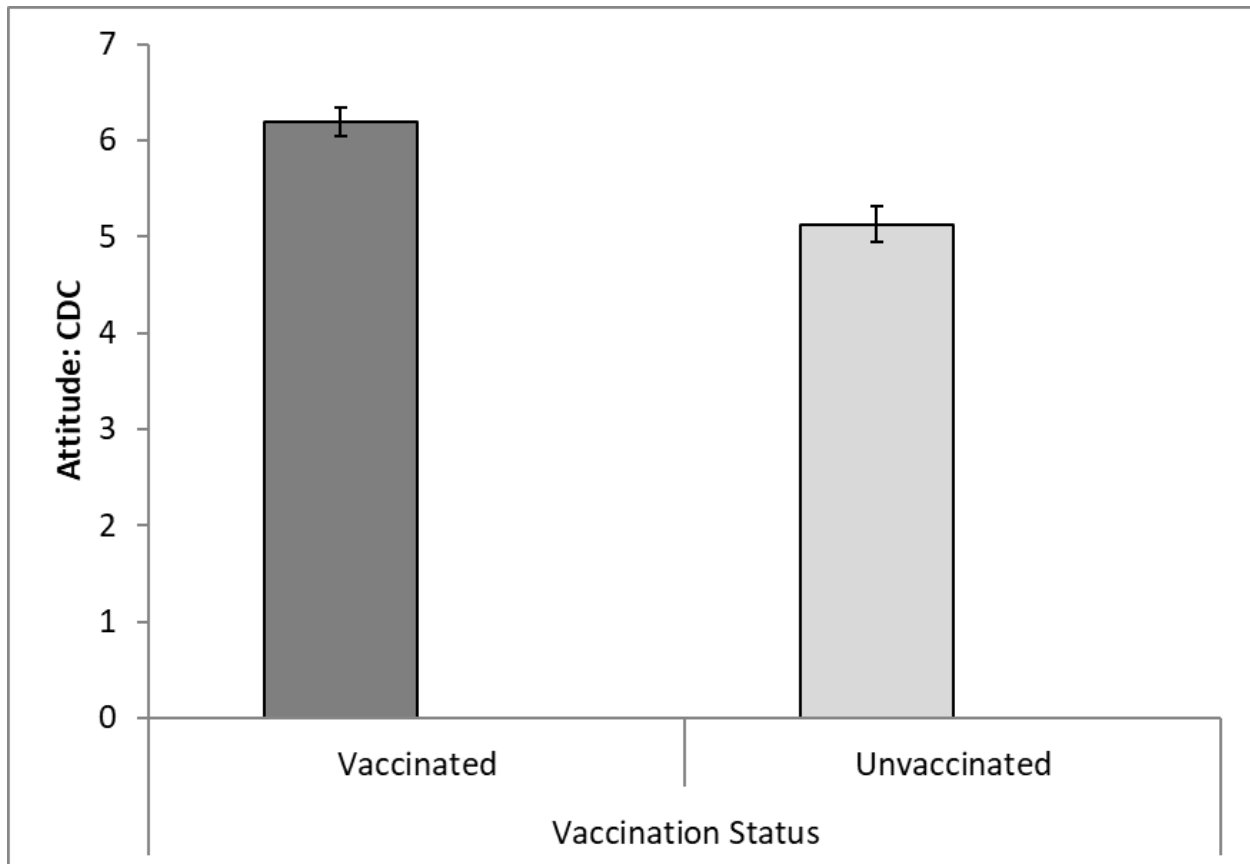
**Figure 5**

*Attitude Towards Covid-19 Vaccine and Vaccination Status*



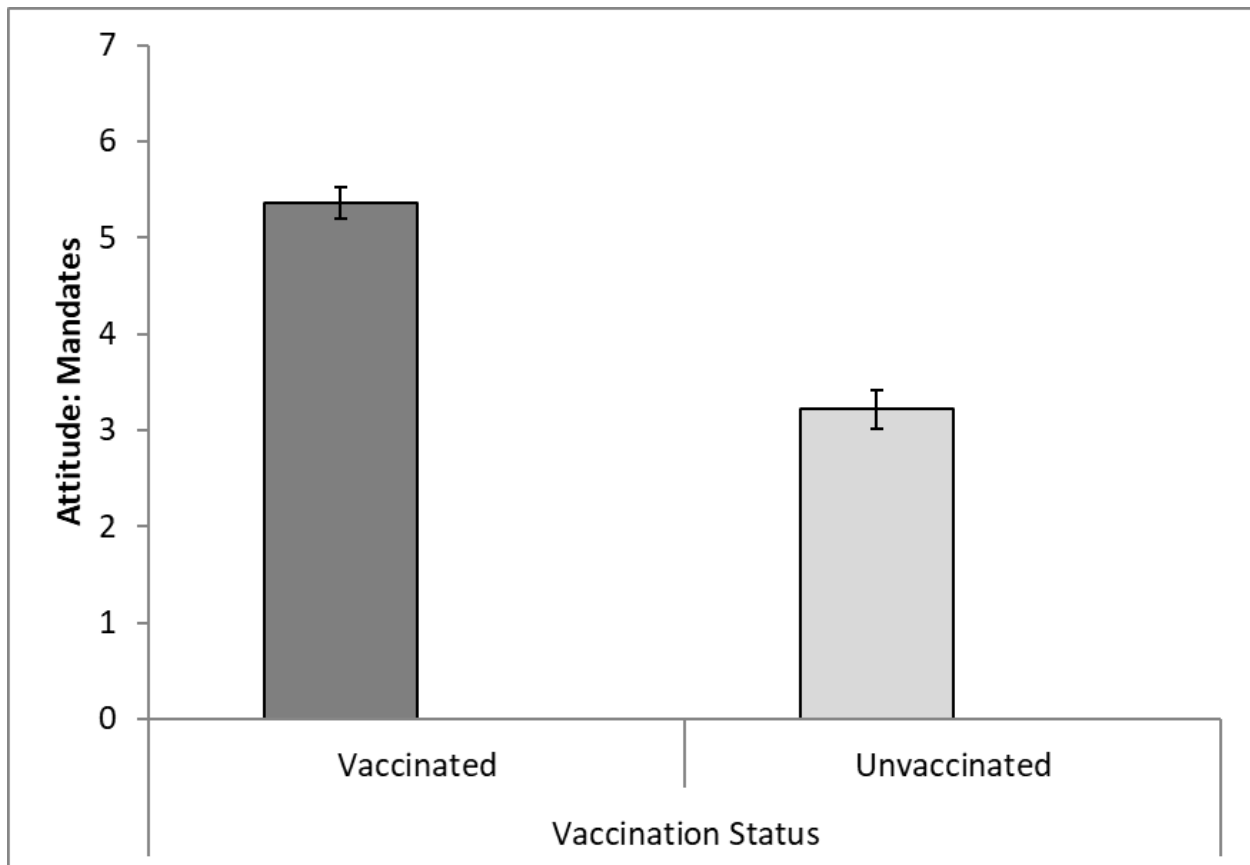
**Figure 6**

*Attitude Towards CDC Guidelines and Vaccination Status*



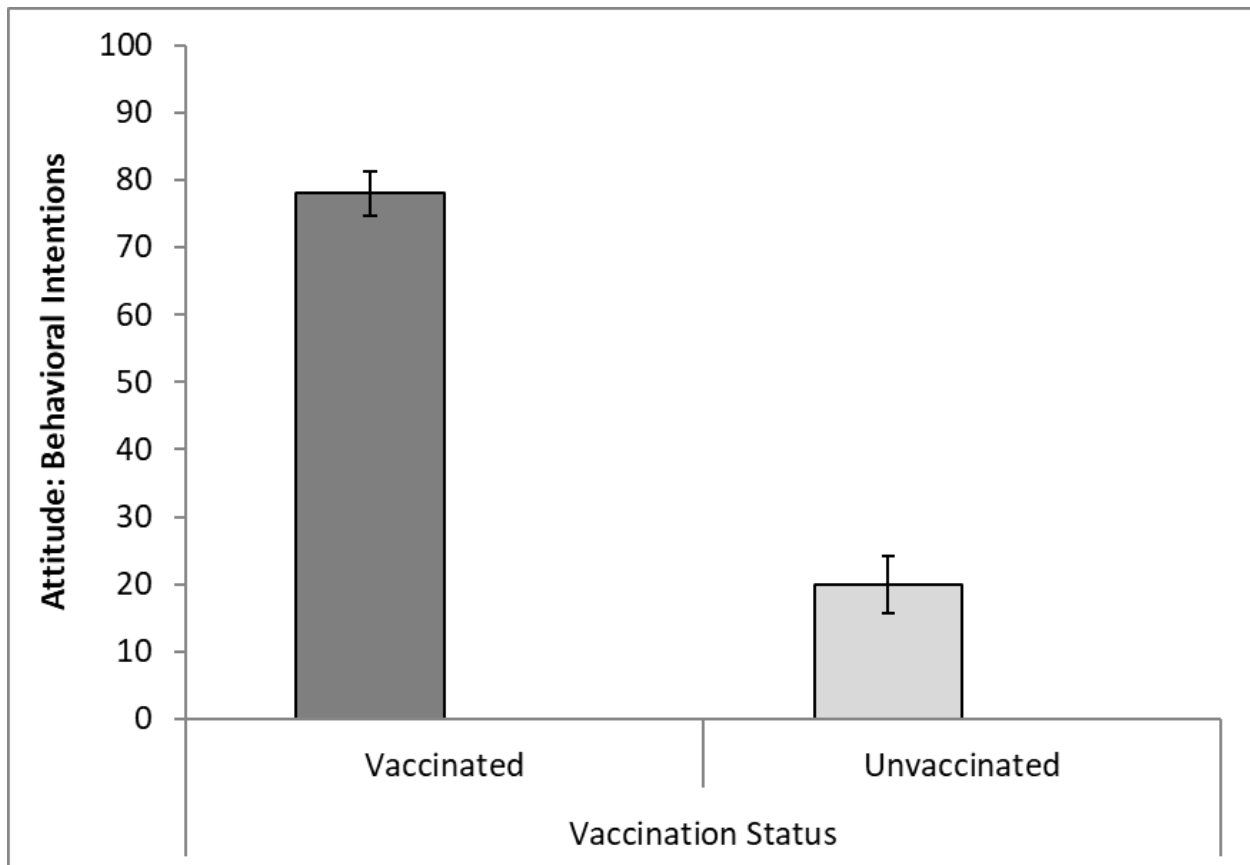
**Figure 7**

*Attitude Towards Covid-19 Vaccine Mandates and Vaccination Status*



**Figure 8**

*Behavioral Intentions and Vaccination Status*



## CHAPTER 4

### DISCUSSION

The current study aimed to investigate the impacts of source similarity and controlling language on reactance (e.g., perceived threat, anger, negative cognitions, attitudes towards the message), and behavioral intentions. I sought to answer 3 main questions: (1) If individuals perceive the communicator of a persuasive health message as similar to them, then will they be more inclined to comply with their persuasive message? (2) Does the language used in a persuasive message impact the degree of reactance the message recipient experiences?, and (3) Do both the source and the language have a bigger influence on reactance than each variable on its own?

Unfortunately, the similarity manipulation was ineffective, making it difficult to answer these questions. That is, participants reported no significant differences in perceived similarity to the source of the persuasive message. Several factors could have contributed to the ineffectiveness of this manipulation, such as lack of information about participants needed to create a communicator with similar/dissimilar characteristics, and insufficient information for participants to determine their perceived similarity to the communicator. For instance, previous research collected data about participants through a questionnaire prior to having them participate in the study, then they manipulated characteristics to make the communicator seem similar or dissimilar to the participant (Burnstein et al., 1961; Burger et al., 2004). Future research aiming to manipulate similarity to a communicator would likely benefit from gathering data from participants in a questionnaire prior to administering the experimental manipulation. Additionally, the similarity manipulation may have been ineffective due to insufficient information about the communicator. Adding longer prompts with more details, such as birthday,

sex, gender, race/ethnicity, hometown, etc. (Burger et al., 2004) would likely aid in creating greater perceived similarities and dissimilarities. Unfortunately, that was not feasible because of the available resources to complete this study. Future research should administer a survey to participants and gather information necessary to create a similar or dissimilar communicator, and then administer a survey in which the communicator is presented to them.

Interestingly, the correlational analyses revealed an unexpected finding. As similarity increased, attitudes towards vaccination mandates were less favorable. It is important to note that the similarity measure came before any of the health messages. Thus, once people felt that the speaker was like them, they then found the message they received to be less ideal. Given that similarity is often important in public health and other persuasion campaigns, it is important to investigate this link further to identify why it exists.

### **Controlling Language and Perceived Threat**

This study provides evidence to suggest that the language used in a persuasive message impacts the degree of reactance the message recipient experiences. Data revealed that those in high controlling language condition reported feeling more threatened than those in the low controlling language condition. Consistent with previous research, (Miller et al., 2007; Miller, 2015; Pennebaker & Sanders, 1976), the type of language used in a persuasive message significantly impacts if a message is perceived as threatening. That is, high controlling language or language that is explicit, demanding, overt, and bossy creates a greater sense of threat in comparison to low controlling language. Carefully creating low controlling persuasive messages



that are polite, implicit, and supportive of autonomy may potentially mitigate some of the negative reactions associated with persuasive messages in general.

Although the current high controlling language prompts induce minor to moderate levels of perceived threat to freedoms, it may be beneficial to further adapt prompts to investigate and identify if particular words or phrases may increase perceived threats to freedoms. Future research may benefit from slightly modifying the high controlling language messages to include more demanding and explicit language, whereas the low controlling language prompts could be modified to include slightly more ambiguous and polite language.

Interestingly, there were no interactions between language and similarity. The reason for this could be attributed to the manipulation, or it could indicate that perceived similarity to the communicator of a message may not be as important as previously predicted. That is, individuals may be less likely to care less about who is delivering the message and more likely care about the contents of that message.

### **Vaccination Status**

We explored how controlling language interacted with vaccination status. Though vaccine status did interact with controlling language, another effect did emerge. Participants who were unvaccinated found persuasive messages about Covid-19 immunizations to be more threatening compared to individuals that were vaccinated. Unvaccinated participants also reported higher levels of anger, irritation, aggravation and annoyance, whereas those who were vaccinated reported lower levels.

Further, participants' vaccination status significantly related to attitudes. For example, participants who were not vaccinated reported more negative attitudes towards getting

vaccinated against Covid-19, compared to those who did receive the Covid-19 vaccine. Similarly, participants who are unvaccinated had less favorable attitudes towards following CDC guidelines; and unvaccinated participants reported more negative attitudes towards vaccination mandates, when compared to vaccinated individuals. Finally, unvaccinated individuals reported much lower behavior intentions or intent to get vaccinated than those who were vaccinated.

An individual's vaccination status appears to be a strong predictor of how a persuasive health message is perceived. It is worthy to emphasize that while controlling language impacted perceived threat and anger, participant vaccination status impacted every dependent variable measured. It is worth noting that this may be due to public health messaging from the beginning of the pandemic successfully persuading individuals to receive the Covid-19 vaccine. Unfortunately, this may mean that individuals who are unvaccinated will be less likely to comply with persuasive health messages regardless of if polite, autonomy supportive language is used.

### **Limitations and Conclusions**

The current study included additional limitations that are worthy of consideration. First, this study is underpowered, meaning that the chances of detecting reliable, meaningful results is future research should carefully consider the amount of time required to recruit an adequate number of participants for their study. Research may benefit from promoting their survey through various strategies and in various settings (i.e., fliers, ads in papers, college classrooms, QR codes, incentives). This may allow a larger number of people the opportunity to participate in research.

Additionally, it is also important to consider the online method for this study. Although anonymity of online surveys reduces the likelihood of participants responding in a socially

desirable manner (Curran, 2016), there are still potential threats to the quality of data due to inability to determine how much effort and thought participants put into the survey. For example, participants' only incentive for the research was .5 SONA credits; the lack of incentives to provide meaningful data may impact the quality of responses participant gave.

This study hypothesized a main effect of controlling language and source similarity, as well as an interaction of low controlling language and high source similarity. Results indicated that the similarity manipulation was insufficient and therefore had no effect on levels of perceived similarity. However, primary analyses revealed a main effect of controlling language on perceived threat – indicating that the type of language used in a message significantly impacts the degree to which one feels as though their freedoms are being violated or threatened.

Additionally, exploratory analyses indicated an impact of vaccination status on all measures of reactance (perceived threat, anger, negative cognitions, attitudes towards the message and behavioral intentions) – suggesting that one's vaccination status is likely to predict how they will react towards a persuasive message about vaccines regardless of the type of language use. To put simply, someone who is not vaccinated would be more likely to have more negative reactions towards a message about vaccines than someone who is vaccinated, even if non-controlling, polite language is used. Future research should explore other ways to mitigate negative reactions to health advice, such as adapting messages to contain certain language based on the status/opinion of the individual receiving the advice.

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## APPENDIX 1: Manipulations

### Similarity

*Instructions:* Imagine you are being introduced to someone. On the next page, you will be given a bit of information about them, please read it carefully before proceeding to the next page.

**Similar:** “My name is Jordan. I am 21 years old and a student at Georgia Southern. Some of my favorite things include: listening to music, hanging out with friends, tailgating, football games, and going to the beach. I’m excited to settle down and find a good job after graduating.”

**Dissimilar:** “My name is Jordan. I am 58 years old and I work at Appalachian State. Some of my favorite things include: research, spending quality time with my family, gardening, reading classic novels and trivia. I’m excited to retire and settle down after a long career.”

## Controlling Language

*Instructions:* Now, imagine that Jordan and you are having a conversation about Covid-19 vaccines and boosters. Imagine that this is what Jordan says:

**Low controlling:** “Getting the COVID-19 vaccine (and bivalent booster if already vaccinated) can greatly reduce the risk of infection, hospitalization, and death compared to unvaccinated people. So, getting the vaccine is worthy of serious consideration. There is pretty compelling evidence showing the effectiveness of vaccines. And, the fact that COVID-19 can cause long term health problems such as: damage to the lungs, heart, nervous system, kidneys, liver and other organs means that you might want to consider getting the COVID-19 vaccines.

So, if you are already vaccinated, keep up the good work. And if you haven’t been vaccinated or boosted, now might be a good time to start. You may want to consider getting it today.”

**High controlling:** “Getting the COVID-19 vaccines (and bivalent booster if already vaccinated) can greatly reduce the risk of infection, hospitalization, and death compared to unvaccinated people. There is really no choice when it comes to getting vaccinated: In fact, the scientific evidence showing vaccine effectiveness is clear and overwhelming. And the fact that COVID-19 can cause long term health problems such as: damage to the lungs, heart, nervous system, kidneys, liver and other organs should obviously make you want to get vaccinated or boosted immediately or as soon as possible.

So, if you are already vaccinated, do NOT stop following health guidelines. And, if you haven’t been vaccinated or boosted, right now is the time to get it. Today. Do it because you have to!”